Electronic Person Perception : What Do We Infer About People From the Style of Their E-mail Messages?

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Electronic Person Perception: What Do We Infer About People From the Style of Their E-mail Messages?

Francis T. McAndrew[1] and Chelsea Rae De Jonge[1]

Abstract

Previous studies of blogging and e-mail correspondence have focused on how writers express personality traits and emotion in their writing. This study complements these earlier studies by focusing on how these messages are perceived by others. A total of 166 undergraduate students made judgments about the senders of e-mails in which the person (first vs. third) that the message was written in was manipulated along with the presence or absence of expressive punctuation and typographical errors. Messages written in the third person were perceived as angrier and more likely to be written by someone in a supervisory relationship with the recipient of the e-mail, and the presence or absence of question marks and/or exclamation points was a strong determinant of the judgments that were made about the sender's emotional state and relationship with the recipient. Messages with a high frequency of expressive punctuation were also more likely to be perceived as having been written by a female. The results suggest that stylistic features of e-mail messages may be an overlooked but influential component of people's reactions to the electronic discourse that they have with others.

Keywords

e-mail, person perception, computers, interpersonal communication

It is difficult to imagine navigating the modern world without the benefit of electronic communication, and with each year it assumes a more dominant role in our professional and personal lives. Indeed, many of us interact on a regular basis with individuals whom we have never actually met in person, and this creates communication problems that are perhaps unique in human history. Researchers are just beginning to scratch the surface of how social networking tools such as Facebook change the ways in which we form impressions of others and how we manage our own self-presentation and self-disclosure in this virtual social space (Back et al., 2010; Nosco, Wood, & Molema, 2010; Vazire & Gosling, 2004; Waggoner, Smith, & Collins, 2009; Wang, Moon, Kwon, Evans, & Stefanone, 2010; Weisbuch, Ivcevic, & Ambady, 2009).

The use of text messaging and e-mail in direct person-to-person communication poses especially interesting challenges. For starters, e-mail and texting effectively eliminate the vocal and visual nonverbal cues that we depend on in face-to-face interactions to convey nuances of meaning and feelings (Epley & Kruger, 2005; Menchik & Tian, 2008). Consequently, e-mail authors frequently get into trouble when they use subtle linguistic devices such as sarcasm and hyperbole, and they may employ tactics such as "smiley faces" and quotation marks to substitute for the paralinguistic and nonverbal disclaimers that are so essential in normal conversation (Whalen, Pexman, & Gill, 2009). The finding that participants in experiments were more willing to lie to others and feel more justified in doing so when using e-mail as opposed to a hand-written message may reflect an understanding that the recipients of e-mail messages will not usually have much information at their disposal, and it thus may be easier to deceive them (Naquin, Kurtzberg, & Belkin, 2010).

Because the problem is so new, we do not yet know much about how we process information about individuals from a relatively socially impoverished source such as e-mail. There is evidence that we are fairly good at identifying the sex of authors of e-mail messages, possibly because we attend to gender-typed patterns of language use (Thomson & Murachver, 2001), and e-mails that contain strong emotional words such as *excited* or *wonderful* elicit more positive impressions in online dating relationships than weaker emotion words such as *happy* or *fine* (Rosen, Cheever, Cummings, & Felt, 2008). A few studies have demonstrated that we can correctly infer the

[1]Knox College, Galesburg, IL, USA

Corresponding Author:
Francis T. McAndrew, Knox College, Department of Psychology, Galesburg, IL 61401-4999
Email: fmcandre@knox.edu

emotional state of bloggers from their written texts (Gill, Gergle, French, & Oberlander, 2008; Rodriguez, Holleran, & Mehl, 2010). Beyond this, however, we are in largely uncharted territory. Much of what we *do* know about our response to e-mails comes from a program of research demonstrating that the style of e-mail messages reveals something about the personality of the sender, especially his or her levels of extraversion and neuroticism (Gill, Oberlander, & Austin, 2006; Oberlander & Gill, 2006). Punctuation, the use of first versus third person pronouns, and the frequency of adjectives and adverbs seem to be key factors in accomplishing this (Gill & Oberlander, 2002; Oberlander & Gill, 2006). Back, Schmukle, and Egloff (2008) even demonstrated that e-mail addresses alone provide valuable cues about personality.

The aforementioned studies have focused almost exclusively on how writers express their personalities and emotions through electronic correspondence. We are more interested in how the senders of messages are perceived by others and not so much with the question of whether the inferences drawn by these others are accurate or not. Thus, it is the goal of the present study to expand what we know by experimentally examining the specific features of e-mail messages that might be reliably related to the judgments an observer will make about the mood, sex, and status of the author of an e-mail message. To keep the study manageable in scope, the universe of linguistic variables that are relevant in judging e-mail messages had to be narrowed considerably. We elected to go with three as the maximum number of variables we could accommodate since the number of participants needed for a larger experiment becomes prohibitive for us and because anything more complicated than a three-way interaction becomes tricky to interpret. Specifically, we looked at the following three independent variables: (a) whether a message was written in the first person versus the third person, (b) whether the message contained typographical or grammatical errors versus no errors, and (c) the nature of the punctuation that was used in the message. The effect of these variables on perceptions of the sender's mood, sex, and relationship to the recipient of the message was then assessed.

We chose our variables rather arbitrarily. We wanted to use variables that are common to almost all e-mail messages and that are also fairly easy to manipulate experimentally without changing the meaning of the messages. Two of these variables (the use of first versus third person and the type of punctuation that is used) have been identified by previous researchers (i.e., Gill & Oberlander, 2002; Oberlander & Gill, 2006) as being instrumental for writers when they are expressing their emotions and personality through their writing, and we wanted to see if these same variables would also be used by the readers of e-mail messages to draw consistent inferences about the senders of the messages. The third variable, the presence of typographical or grammatical errors, has not been examined in previous studies, but it is an easily noticed, potentially important cue that readers might use when forming impressions of the sender of an e-mail message, and we were curious to see if it interacted with the variables that have been studied by other researchers.

Method

Participants

Participants were 166 undergraduate students (aged 18–23) at a liberal arts college in the American Midwest. The sex of the participants was not requested.

Procedure

Data collection took place online. Participants were recruited through a campuswide e-mail solicitation containing a brief description of what the study would entail with links to the study's website. Four different stimulus packages corresponding to the four experimental groups were created using Snap Survey software. Each of the four packages included a consent form, which had to be completed before the participant could complete the study. Participants were assigned to one of four different experimental groups based on the first letter of their last name (Group 1 = names beginning with A–F, Group 2 = names beginning with G–L, Group 3 = names beginning with M–R, and Group 4 = names beginning with S–Z) and were instructed to follow the link that corresponded to their group assignment. Although this was not random assignment in the strict sense of the term, it was a logistically efficient way of distributing the participants across experimental conditions without introducing any apparent confounding source of bias.

When the participant logged into the experimental website, he or she was presented with a series of four stimulus e-mail messages. All stimulus messages were constructed to resemble e-mails that would typically be sent to members of college student clubs or organizations, and there were no cues in the message that could reveal the sex or organizational status of the sender of the message. Sixteen different messages were used in all (four messages in each of the four experimental conditions), and they were highly similar to each other in all regards except for the independent variables. The independent variables were manipulated in the e-mail messages along three dimensions: type of punctuation, whether mistakes or typos were present, and whether the message was written in the first or third person. By way of an example, one of the stimulus e-mails was the following:

> I was unable to attend today's meeting. Were you present? If so, could you please send me a list of the information we covered? I want to make sure not to fall behind. Is there anything really important I should be aware of? Was Sue at meeting? Did she present any new ideas pertaining to next week's event? Was anything brought up that could affect my publicity campaign? Please send me all your notes as soon as you can. I really appreciate this. Thanks!

Punctuation was manipulated as a repeated measures variable, with each participant seeing one e-mail message containing five question marks, one containing five exclamation points, one that had neither question marks nor exclamation points, and one that contained both five question marks and five

exclamation points. Periods and commas were the only other punctuation marks to appear in these messages, and they appeared in all of the messages in the appropriate places.

First versus third person was manipulated as a between-subjects variable, with two of the experimental groups viewing e-mails written in the first person and two viewing e-mails written in the third person. The content of e-mails in the two conditions was essentially the same. For example, instead of saying "several of us wanted to add an event" (first person), the e-mail written in the third person said "several people wanted to add an event."

The presence of mistakes and typographical errors was manipulated as a between-subject variable. Participants in two of the experimental groups viewed e-mails that were free of errors, whereas the participants in the other two groups viewed e-mails containing five common mistakes such as misspelled words, transposed letters within a word, missing commas and apostrophes, and using the wrong spelling of a word (e.g., *their* vs. *there*).

Each participant was exposed to four e-mail messages. Messages were displayed one at a time, with each followed by nine statements. Participants indicated their level of agreement with the statements on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The first four items assessed the likelihood that the author of the e-mail was the supervisor, subordinate, coworker, or friend of the e-mail recipient. The next four items, examining mood, assessed whether the e-mail author was angry, happy, confused, and apathetic. One final question asked participants to indicate whether they thought that the author of the e-mail was more likely to be male or female.

Results

The responses to the eight Likert-type scale items measuring relationship of sender to recipient and the mood of the sender were analyzed with 2 (first vs. third person) × 2 (mistakes vs. no mistakes) × 4 (punctuation style) ANOVAs with punctuation analyzed as a repeated measure. A Greenhouse–Geisser formula was used for the analysis of the repeated-measures variable. This is a conservative precaution against taking unfair advantage of chance while still taking advantage of the increase in power offered by a repeated–measure design. To control for experimentwise error, a Bonferroni correction indicated that a more conservative alpha level of .006 was a better guide for assessing the significance of the ANOVAs. Tukey tests were used to assess the post hoc differences between means in the four-level punctuation condition. In the interest of readability, unless otherwise noted, only the results of tests that were significant at the more conservative Bonferroni level are reported. Similarly, significant differences between means detected by the Tukey tests are reported as such without providing the details of each individual test. Please note that although the Greenhouse–Geisser formula recalculates degrees of freedom into numbers that are not usually whole numbers, for reporting purposes the degrees of freedom from these analyses were rounded off to whole numbers.

Table 1. ANOVA Results for the Main Effects of Punctuation

Dependent variable	*F*	*df* (rounded)	Significance
Perceived as supervisor	10.15	3, 470	.002
Perceived as subordinate	8.41	3, 450	.0001
Perceived as coworker	12.75	3, 484	.0001
Perceived as friend	24.68	3, 367	.0001
Perceived as angry	64.35	2, 395	.0001
Perceived as happy	349.46	3, 432	.0001
Perceived as apathetic	95.69	2, 355	.006
Perceived as confused	157.45	2, 298	.0001

There was a main effect for the message written in the first versus third person in that messages in the third person were more likely to be perceived as being written by a supervisor, $F(1, 162) = 10.15$, $p < .002$ ($M = 2.85$, $SD = 0.081$ vs. $M = 2.51$, $SD = 0.073$), and were also perceived to be angrier than messages written in the first person, $F(1, 162) = 7.57$, $p < .007$ ($M = 1.71$, $SD = 0.051$ vs. $M = 1.52$, $SD = 0.046$). The only main effect for the presence of errors versus no errors in the message occurred when authors of messages containing errors were perceived to be significantly more apathetic than authors of messages that did not contain errors, $F(1, 162) = 7.78$, $p < .006$ ($M = 2.09$, $SD = 0.058$ vs. $M = 1.85$, $SD = 0.059$). There were no significant interactions of errors with any other variables ($p > .006$).

A very influential variable was the presence or absence of expressive punctuation, as there was a significant main effect of punctuation on all eight of the dependent variables. The results of the ANOVA main effects for punctuation are presented in Table 1, and the means and standard deviations for each of the dependent variables are presented in Table 2. As you can see from the data in Tables 1 and 2, the sender of an e-mail message was most likely to be perceived as a supervisor when no question marks or exclamation points were used and least likely to be perceived as a subordinate if both question marks and exclamation points were used. The sender was most likely to be perceived as a coworker when question marks were used and most likely to be perceived as a friend in messages where either exclamation points or both exclamation points and question marks were used. Punctuation also influenced judgments of the sender's emotional state. Question marks were perceived to indicate a sender who was either angry or confused whereas exclamation points were associated with a sender who was happy. A lack of either question marks or exclamation points inclined the participants toward judging the sender as apathetic.

There were several significant interactions of punctuation with the person (first vs. third) in which the message was written. In each case, it was a matter of the person of the message amplifying the effects of the punctuation. For example, a sender writing in the third person without question marks or exclamation points was *especially* likely to be perceived as a

Table 2. Means and Standard Deviations for All Variables in the Punctuation Conditions

	Question marks		Exclamation points		Both ? and !		Neither ? or !	
Dependent variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Perceived as supervisor	^{a}2.26	0.076	^{b}2.63	0.093	^{b}2.74	0.098	^{c}3.10	0.092
Perceived as subordinate	^{a}2.48	0.073	^{a}2.31	0.073	^{b}2.02	0.067	^{a}2.40	0.079
Perceived as coworker	^{a}3.91	0.061	^{b}3.56	0.072	^{b}3.48	0.079	^{b}3.32	0.077
Perceived as friend	^{a}2.87	0.078	^{b}3.24	0.073	^{b}3.26	0.078	^{c}2.54	0.064
Perceived as angry	^{a}2.10	0.072	^{b}1.20	0.035	^{c}1.50	0.052	^{c}1.67	0.047
Perceived as happy	^{a}2.15	0.057	^{b}4.68	0.038	^{c}3.96	0.067	^{d}3.08	0.082
Perceived as apathetic	^{a}2.32	0.083	^{b}1.37	0.041	^{b}1.52	0.046	^{c}2.67	0.094
Perceived as confused	^{a}2.94	0.084	^{b}1.47	0.046	^{c}1.70	0.055	^{c}1.73	0.046

Note: Means with different superscripts are significantly different from each other as determined by Tukey tests.

supervisor, $F(3, 470) = 5.90$, $p < .001$, a sender using exclamation points and the first person was *especially* likely to be perceived as a friend, $F(3, 367) = 3.60$, $p < .01$, and the combination of question marks and the third person made a sender seem *especially* angry, $F(2, 395) = 10.13$, $p < .0001$.

The item assessing the perceived sex of the sender was assessed with a χ^2 test for each variable. The only result of interest from these analyses was that a message containing no question marks or exclamation points was more likely to be perceived as having been sent by a male than by a female, $\chi^2(1) = 44.55$, $p < .0001$, but senders of messages containing any combination of question marks and exclamation points were more likely to be perceived as females (for all analyses $p < .0001$).

Discussion

Although it may seem a bit artificial to ask people to evaluate e-mail messages that contain no information about the sex or status of the sender, the results of our study indicate that there are indeed explicit stylistic strategies that readers resort to when ambiguities are present in messages. Writing in the third person creates a formality and distance that can be used to convey authority or negative emotions such as anger. Writing in the first person, on the other hand, fosters intimacy and informality and makes a message less likely to appear threatening.

Expressive punctuation such as question marks and exclamation points appears to be effective as "cyberlinguistic cues" that one can use to convey subtle information about how a message should be interpreted. These markers apparently give the reader the same type of information that paralinguistic cues provide in spoken discourse (Trager, 1958). The participants in our study drew clear inferences about whether the sender of a message was angry or happy or a supervisor or a friend based on nothing but the manipulation of punctuation. The use of expressive punctuation also was something that our participants associated with a female style of messaging. Although it was not examined in this study, it would be interesting to find out if males and females respond to these messages in the same way.

The primary thing that distinguishes the current study from previous research is that earlier studies focused primarily on how personality differences and emotional states are expressed by the writers of e-mails and blogs, whereas our study focused entirely on how these messages are perceived by others. Thus, we see our study as a complement to the approach taken by previous researchers. In summary, the composition style of e-mail messaging has been overlooked as a source of nonlinguistic meaning in electronic communication, and understanding the dynamics of how it functions can serve to make us only more effective communicators in the ever-expanding world of e-mail and text messaging communication.

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References

Back, M. D., Schmukle, S. C., & Egloff, B. (2008). How extraverted is honey.bunny77@hotmail.de? Inferring personality from e-mail addresses. *Journal of Research in Personality*, *42*, 1116-1122.

Back, M. D., Stopfer, J. M., Vazire, S., Gaddis, S., Schmulke, S. C., Egloff, B., & Gosling, S. D. (2010). Facebook profiles reflect actual personality, not self-idealization. *Psychological Science*, *21*, 372-374.

Epley, N., & Kruger, J. (2005). When what you type isn't what they read: The perseverance of stereotypes and expectancies over e-mail. *Journal of Experimental Social Psychology*, *41*, 414-422.

Gill, A. J., Gergle, D., French, R. M., & Oberlander, J. (2008, March). *Emotion rating from short blog texts*. Paper presented at the ACM Conference on Human Factors in Computing Systems, Florence, Italy.

Gill, A. J., & Oberlander, J. (2002, August). *Taking care of the linguistic features of extraversion*. Paper presented at the 24th annual conference of the Cognitive Science Society, Fairfax, VA.

Gill, A. J., Oberlander, J., & Austin, E. (2006). Rating e-mail personality at zero acquaintance. *Personality and Individual Differences*, *40*, 497-507.

Menchik, D. A., & Tian, X. (2008). Putting social context into text: The semiotics of e-mail interaction. *American Journal of Sociology*, *114*, 332-370.

Naquin, C. E., Kurtzberg, T. R., & Belkin, L. Y. (2010). The finer points of lying online: E-mail versus pen and paper. *Journal of Applied Psychology*, *95*, 387-394.

Nosco, A., Wood, E., & Molema, S. (2010). All about me: Disclosure in online social networking profiles: The case of Facebook. *Computers in Human Behavior*, *26*, 406-418.

Oberlander, J., & Gill, A. J. (2006). Language with character: A stratified corpus comparison of individual differences in e-mail communication. *Discourse Processes*, *42*, 239-270.

Rodriguez, A., Holleran, S. E., & Mehl, M. R. (2010). Reading between the lines: The lay assessment of subclinical depression from written self-descriptions. *Journal of Personality*, *78*, 575-598.

Rosen, L. D., Cheever, N. A., Cummings, C., & Felt, J. (2008). The impact of emotionality and self-disclosure on online dating versus traditional dating. *Computers in Human Behavior*, *24*, 2124-2157.

Thomson, R., & Murachver, T. (2001). Predicting gender from electronic discourse. *British Journal of Social Psychology*, *40*, 193-208.

Trager, G. L. (1958). Paralanguage: A first approximation. *Studies in Linguistics*, *13*, 1-12.

Vazire, S., & Gosling, S. D. (2004). E-Perceptions: Personality impressions based on personal websites. *Journal of Personality and Social Psychology*, *87*, 123-132.

Waggoner, A. S., Smith, E. R., & Collins, E. C. (2009). Person perception by active and passive perceivers. *Journal of Experimental Social Psychology*, *45*, 1028-1031.

Wang, S. S., Moon, S., Kwon, K., Evans, C. A., & Stefanone, M. A. (2010). Face off: Implications of visual cues on initiating friendship on Facebook. *Computers in Human Behavior*, *26*, 226-234.

Weisbuch, M., Ivcevic, Z., & Ambady, N. (2009). On being liked on the web and in the real world: Consistency in first impressions across personal webpages and spontaneous behavior. *Journal of Experimental Social Psychology*, *45*, 573-576.

Whalen, J. M., Pexman, P. M., & Gill, A. J. (2009). "Should be funnot!" Incidence and marking of nonliteral language in e-mail. *Journal of Language and Social Psychology*, *28*, 263-280.

Bios

Francis T. McAndrew is the Cornelia H. Dudley Professor of Psychology at Knox College and a Fellow of the Association for Psychological Science. His current research interests focus on the evolutionary roots of heroic behavior, the psychology of gossip, and the relationship between testosterone and human male aggression.

Chelsea Rae De Jonge is a recent graduate of Knox College and she is currently a graduate student in Industrial/Organizational Psychology at Elmhurst College.